attached to the cornea at all. Additionally, the flap 64 may be shaped or sized as desired and does not need to be circular.

[0054] Laser 18 is preferably an ultrashort pulse laser, such as a pico, femto or atosecond laser, but may be any light emitting device suitable for creating a flap in the cornea 56. The ultrashort pulse laser is positioned in front of the eye 58, using the control station 24 and robotic arm 12, and focuses the laser beam in the cornea 56 at the desired depth and in the desired flap configuration. Ultrashort pulse lasers are desired since they are high precision lasers that require less energy than conventional lasers to cut tissue and do not create "shock waves" that can damage surrounding structures. Cuts made by ultrashort pulse lasers can have very high surface quality with accuracy better than 10 microns, resulting in more precise cuts than those made using mechanical devices or other types of lasers. This type of accuracy results in less risks and complications than the procedures using other types of lasers or mechanical devices.

[0055] As seen in Fig. 8, the flap 64 is then lifted using any device known in the art, such as spatula or microforceps (not shown) or any other device. The microforceps can be coupled or attached to a robotic arm, as described above, which would allow the flap to be lifted under the control of station 24, or the microforceps can be manually manipulated by the surgeon performing the surgical procedure.

[0056] Lens or implant blank 52 is then positioned or introduced in between the first and second internal surfaces 60 and 62, respectively of the flap 64. Preferably, the implant is positioned or placed on internal corneal surface 62 using implant dispenser or carrier device 22, as shown in Fig. 9. Specifically, the lens dispenser 22 has a housing 74, a plunging portion 76 and a stem 78. Preferably the entire device 72 is formed of transparent plastic and the housing has an outer diameter of about 1-11 mm. The plunging portion is also transparent plastic with a diameter of about 1-9 mm, which is substantially the same as both the inner diameter 80 of housing 74 and the diameter of implant 52. The plunging portion 76 also can have a mark, such as "cross hairs" or a dot centered thereon, which helps in aligning the implant 52 with the center or optical axis of the eye 58. Since the housing 74, stem 78 and plunging

portion 76 can each be transparent, by putting "cross hairs" or a dot on the plunging portion a camera or the naked eye can be used to view the "cross hairs" through the housing and/or stem and the plunging position to align the contact with the surface of the eye. The stem 78 electrically connects the plunging portion to station 24 so that station 24 can control when an implant is placed on the surface of the cornea. The plunger is generally coupled to an electric or pneumatic (or any other type of motor) which can be activated remotely to actuate the plunger mechanism and thereby deposit an implant on the surface of the eye. However, the plunging mechanism does not necessarily need to be motorized and can be manually activated by hand if desired. The carrier device 72 can carry at least one implant 52 therein and preferably carries more than one implant therein, such as three or more. Thus, each eye of a patient may be operated on in succession without reloading the implant dispenser 22 or multiple patients may be operated on in succession without reloading the dispenser.

[0057] Implant 52 is preferably any polymer or hydrogel having about 50% water content; however, the water content can be any percentage desired. The implant may be formed from synthetic or organic material or a combination thereof. For example, the implant can be collagen combined with or without cells; a mixture of synthetic material and corneal stromal cells; silicone or silicone mixed with collagen; methylmetacrylate; any transparent material, such as polyprolidine, polyvinylpylidine, polyethylenoxyde, etc.; or any deformable polymer, which can change its shape with radiation after implantation. Additionally, the implant can be any shape or sized desired, can have a different or similar refractive properties to the refractive properties of the cornea, and it can have pigmentation added thereto to change the color of the lens or it can be photochromatic. As seen in Figs. 10 and 11, the implant 52 can have a mark, such as “cross hairs” 82 or a dot 84 centered thereon, which helps in aligning the lens with the center of the eye.

[0058] Additionally, as seen in Figs. 12-14 once the implant 52 is in place, if necessary, the implant can be irradiated and a portion 86 of the ocular material can be ablated by an excimer laser 20. The implant 52 can be ablated to form any shape or size desired. Specifically, the implant 52 preferably is about generally about 1-9 mm

about 1-9 mm in diameter when placed on the surface of the cornea. The curvature preferably has a radius of about 1-20 mm, and more preferably about 4-7 mm. The thickness is preferably about 5-2000 microns, and more preferably about 100 microns. As seen in Fig. 12 and after ablation, the lens 52 is about 1-9 mm from the inner diameter to the outer diameter and more preferably about 3-5 mm. Additionally, the inside edge can be ablated to be thinner or thicker than the outside edge; for example the inside edge can have a thickness of about 1-100 microns, while the outside edge has a thickness of about 20-3000 microns. However, the implant can have any thickness or configuration that would allow it to elevate or move any portion of the flap 64 relative to surface 62. For example, the lens 52 can be ablated to form a ring having multiple bumps or "peaks 55 and valleys 57" (Figs. 13 and 14) or the lens can be partially ablated, so that one portion 53 of the ring has a larger cross-sectional area than another section 59 (Figs. 15 and 16).

[0059] Furthermore, the lens 52 can have an area at the outer perimeter ablated (Fig. 18) or it can have one side or portion offset from the main optical axis ablated (Fig. 17), to help correct astigmatism. The thickness ablated, amount ablated and position of lens 52 generally defines the degree of correction.

[0060] It is noted that although it is preferable to have the inlay ablated on or adjacent to the surface of the cornea, the inlay can be formed or shaped in any manner desired. For example, the inlay can be formed or shaped away from the cornea using a laser, a mill or casting. Preferably, these shaping methods are done when the information needed to modify the inlay or lens is transmitted through a computerized system after wavefront technology has measured the refractive error of the eye; however, as stated above, the wavefront technology information may be used to determine the specific shape and/or size of the prefabricated lens that is to be used.

[0061] The flap 64 is then replaced so that it covers or lies over the lens in a relaxed state, as seen in Figs. 19-21. In other words, implant 52 does not force flap 64 away from the internal surface 62, and described above, and therefore the refractive properties of the cornea are not altered due to a tension force being applied to the flap.